

CLAIMS

1. A LIN bus system comprising a plurality of modules linked to a LIN bus along which electronic data or instructions can be sent to and from each said module, at least one of said modules being non configured and having no unique
5 identification address associated therewith, said at least one module having a unique code associated therewith, said system further including configuration means which interrogates said modules and detects the unique code of said at least one non-configured module and transmits a configuration signal to the module to configure the module, each said non configured module including
10 counter means which is incremented each time a non configured is configured, said counter of each non-configured module, once configured, providing a unique code which is indicative of the position of the module in the system.
2. A LIN bus system as claimed in claim 1 wherein the at least one module having a unique code associated therewith is a reconfigurable module having
15 means for being configured with an ID and also having embedded within it at the manufacturing stage a fixed unique Chip Identification Code (CIN) for use during a configuring operation.
3. A LIN bus system as claimed in claim 2 wherein said reconfigurable module is a module compatible with the LIN bus Standard.
- 20 4. A LIN bus system as claimed in claim 3 wherein said reconfigurable module has two LIN Bus interface pins connected by a series resistor.
5. A LIN bus system as claimed in claim 4 wherein the series resistor is a 1 ohm resistor.

- 15 -

6. A LIN bus system as claimed in any preceding claim wherein said reconfigurable module further comprises a pull up resistor and a pull up current source for forcing a pull up current through the pull up resistor.
7. A LIN bus system as claimed in any one of claims 3 to 6 wherein if a number
5 of said reconfigurable modules are connected in a daisy chain manner standard LIN Bus arbitration rules apply for selecting one module from the daisy chain.
8. A LIN bus system as claimed in claim 7 wherein said pull up current only flows whilst said module is selected.
9. A LIN bus system as claimed in any preceding claim wherein said
10 reconfigurable module further comprises a position counter, which may be incremented to indicate the position of the module in a daisy chain.
10. A LIN bus system as claimed in any preceding claim wherein said reconfigurable module further comprises a random code generator for generating a random code of a plurality of bits in length to identify the module
15 as an alternative to the CIN code.
11. A LIN bus system as claimed in any preceding claim wherein said unique code is a CIN.
12. A LIN bus system as claimed in anyone of claims 1 to 10 wherein said unique code is a randomly generated code.
- 20 13. A LIN bus system as claimed in any preceding claim wherein said LIN Bus system comprises a plurality of non-configured reconfigurable modules connected together in a daisy chain manner.

- 16 -

14. A LIN bus system as claimed in claim 13 wherein a configuration sequence is performed to configure each of the plurality of non-configured reconfigurable modules.
- 5 15. A LIN bus system as claimed in claim 14 wherein during a configuration sequence the bus master transmits a configuration request and all non-configured reconfigurable modules respond by transmitting a reply consisting of their unique code.
- 10 16. A LIN bus system as claimed in claim 15 wherein standard LIN bus arbitration rules apply, wherein active states win over recessive states, and one non-configured reconfigurable module will thus win the arbitration and become the 'selected module'.
17. A LIN bus system as claimed in claim 16 wherein the selected module then forces a current through its pull up resistor.
- 15 18. A LIN bus system as claimed in claim 17 wherein non-selected non-configured reconfigurable modules can monitor this current through their series resistors and thereby determine that a selected module is responding.
19. A LIN bus system as claimed in any preceding claim wherein each non-configured reconfigurable module incorporates a position counter incremented on each occasion that a selected module responds with a forced current.
- 20 20. A LIN bus system as claimed in claim 19 wherein the position counter on a particular non-configured reconfigurable module is not incremented when the particular non-configured reconfigurable module is itself selected

- 17 -

21. A LIN bus system as claimed in claim 20 wherein the position counter on a particular non-configured reconfigurable module is not incremented after the particular module has been selected.

22. A LIN bus system as claimed in claim 21 wherein once all un-configured extended capability modules have been selected each will have a position counter showing a unique position for that module within the daisy chain and this unique position counter value can then be used to select a module and configure it for use in the system.

23. A method of configuring a LIN Bus system comprising a plurality of said non-configured reconfigurable modules connected in a daisy chain manner comprising the steps of: transmitting a configuration request from a bus master; selecting one module from the daisy chain by standard LIN bus arbitration rules; forcing a current through the pull up resistor of the selected module; incrementing the position counter of each module within the daisy chain that is not currently or previously selected; repeating the above steps until each module in the daisy chain has been selected, the position counters for each module thus showing its unique position in the chain; and using the unique position counter value to select and configure a desired module or a plurality of desired modules.

24. The method of claim 23 wherein the LIN bus system is a LIN bus system as claimed in anyone of claims 1 to 22.